P1

DIGITAL CENTRAL PROCESSING UNIT

~~XEQ-P1~~

Owner's Record

The model and serial numbers are located [illegible]. Record the serial number in the space provided below. Refer to them whenever you call upon your dealer regarding this product.

Model No. XES-P1 Serial No. [illegible]

DIGITAL CENTRAL PROCESSING UNIT

XES-P1

Owner's Manual

Before operating the unit, please read this manual thoroughly and retain it for future reference.

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INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the equipment with respect to the receiver

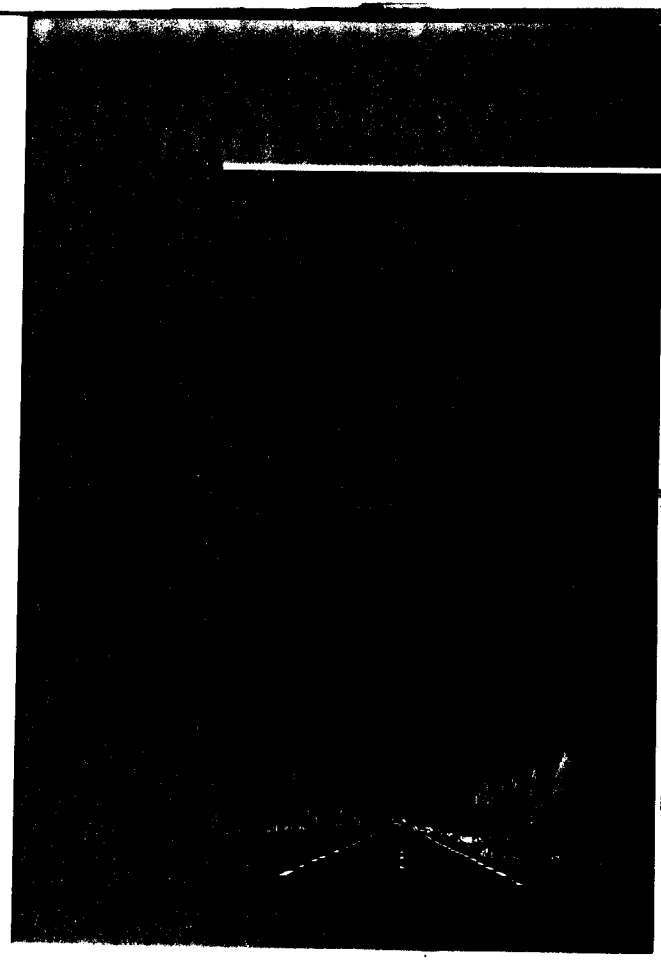
Move the equipment away from the receiver

Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC Rules.



Precautions

When Using this Equipment for the First Time or When Changing Batteries

- Before you start, push the reset button located on the left side of the display window using the tip of a pencil. (See page 11 on how to remove the front panel.)
- If you make a mistake and an error is displayed, read "Troubleshooting guide" on page 105.

Fuse Replacement

Two fuses are located, one at the rear of the display unit, and the other at the rear of the hideaway unit. When you change the fuse, use only a fuse with the rated capacity (amperes) written on the fuse case. Using fuse with too high amperes, etc. will not only cause failure, but may be very hazardous.

Adjusting Sound Volume

Compact discs use digital recording and so has very little noise, and peaks in music signal are very accurate. If you suddenly turn the volume up too much, you get a very loud sound which may damage the speakers or shock you when you are driving. Thus, always start playing program sources at small volume level.

On the Display Window

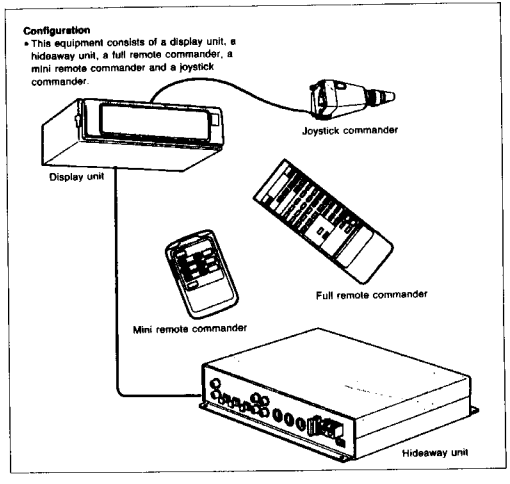
- A cold cathode ray tube is used at the backlight section of the display unit. Under low temperature, the backlight may not turn on due to the characteristic of the cold cathode ray tube. When it becomes warm inside the car, the backlight will turn on.
- Do not press the liquid crystal panel of the display window. Do not place the display unit in a location subject to direct sunlight or ultraviolet rays.
- When you turn on the power, the backlight appears brighter than normal for a few seconds; this process guarantees the backlight will work even under low temperature.

Overview

The XES-P1 is a digital processing preamplifier with a built-in digital signal processor. It comes with remote commanders which you can use to completely control and adjust optionally available CD changer, FM/AM tuner and digital crossover network if they are connected to this equipment.

Configuration

- This equipment consists of a display unit, a hideaway unit, a full remote commander, a mini remote commander and a joystick commander.



Features

- Use of Digital Signal Processor (DSP) to freely control the acoustics inside your car (page 44)
- A 6-band Parametric Equalizer (P.EQ) allowing you to finely adjust sound quality (page 50)
- Use of Dynamic Range Suppressor (DRS) to obtain distortion-free sound in a noisy environment for sources with wide dynamic range (page 78)
- Optical signal transmission avoiding influence from external noise
- An easy-to-read crisp display window (full dot display)
- Custom files for titling discs
- DSP file function for attaching particular soundfield to discs (page 45)
- BANK function to play only desired selections on a compact disc (page 26)
- Last Sound Memory (LSM) function for playing a program source with the stored DSP mode (page 48)
- Able to remotely control optionally available CD changer and digital crossover network

Modes of This Equipment

There are 3 modes in the operation of this equipment.

- **Play mode**
  You can play compact discs or listen to radio broadcasts in play mode.

- **Registration mode**
  You can store various information (custom file name, adjusted parameters, etc.) to memory in registration mode.

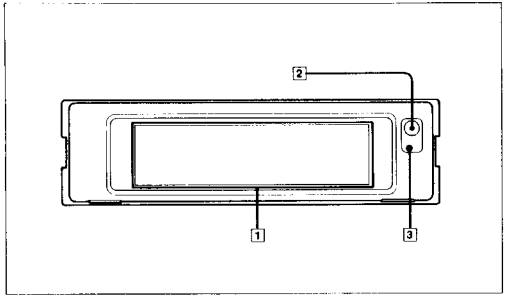
- **Adjustment mode**
  You can adjust various parameters of this equipment.

See page 106 on moving between modes.

Function of Controls

For assembly and connection, refer to the separate "Installation/Connections."

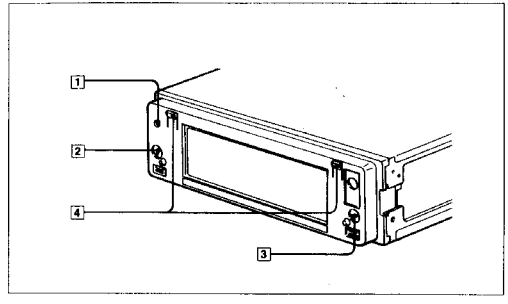
Display Unit



1 **Display window**

2 **Remote sensor**

3 **Auto dimmer sensor**
Automatic dimmer for detecting brightness of the neighboring area and adjusting automatically the backlight brightness. (The backlight may become brighter if being affected by the remote commander operation when neighboring area is dark, but this is not a problem.)



1 **RESET button**
Press this button if this is the first time you use the equipment or when you replace the car batteries. (See page 6 for details.)

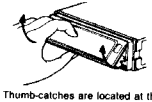
2 **VIEW (contrast) knob**
Adjusts the contrast of the display window for better reading.

3 **DIM (dimmer) knob**
Adjusts the brightness of the display window when the neighboring area is dark.

4 **Panel fixing hooks**

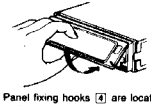
Removing the front panel

Remove the front panel as follows:



Thumb-catches are located at the left and right sides of the lower part.

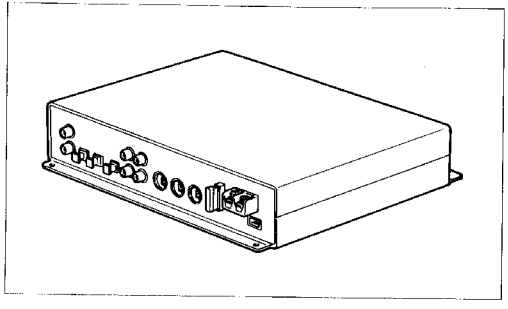
Replace the front panel as follows:



Panel fixing hooks **4** are located at the left and right sides of the upper part.

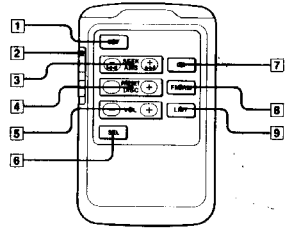
For assembly and connection, refer to the separate "Installation/Connections."

Hideaway Unit



Mini Remote Commander

This commander lets you operate the basic functions of this equipment.



1 OFF (power off) button

2 M.ILL (memory illumination) switch
Slide toward you to turn on the buttons' illumination.
This illumination will go off automatically about 15 seconds of after you have released the switch.

3 ⏮ SEEK/AMS ⏭ (seek/automatic music sensor) button

4 – PRESET/DISC + (preset/disc selection) button

5 – VOL + (volume control) button

6 SEL (control mode select) button

7 CD (CD play/CD changer selection) button

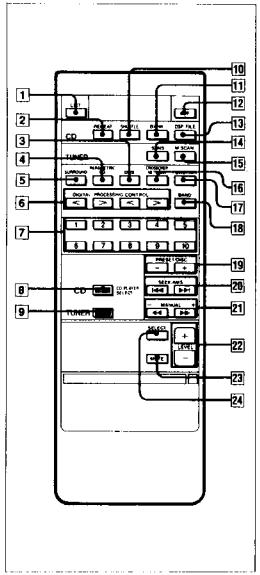
8 FM/AM (radio/band selection) button

9 LIST button

For assembly and connection, refer to the separate "Installation/Connections."

Full Remote Commander

The full remote commander is used mainly for adjusting various functions.



1 **LIST button**
Same as LIST button on the mini remote commander

2 **REPEAT (repeat play) button**

3 **DRS (dynamic range suppressor) button**

4 **PARAMETRIC EQ (parametric equalizer) button**

5 **SURROUND button**

6 **DIGITAL PROCESSING CONTROL buttons**

7 **Numeric buttons**

8 **CD button**
Same as CD button on the mini remote commander

9 **TUNER BAND button**
Same as FM/AM button on the mini remote commander

10 **SHUFFLE (shuffle play) button**

11 **BANK button**

12 **OFF button**
Same as OFF button on the mini remote commander

13 **DSP FILE button**

14 **SENS (radio sensitivity adjustment) button**

15 **M.SCAN (memory scan/best tuning memory) button**

16 **CROSSOVER NETWORK button**

17 **FUNCTION button**

18 **BAND button**

19 **– PRESET/DISC + buttons**
Same as – PRESET/DISC + buttons on the mini remote commander

20 **SEEK/AMS buttons**
Same as SEEK/AMS buttons on the mini remote commander

21 **MANUAL buttons**

22 **– LEVEL + buttons**
Same as – VOL + buttons on the mini remote commander

23 **MUTE button**
Press the button to decrease volume. Press again to resume the volume.

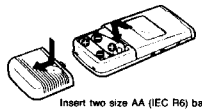
24 **SELECT button**
Same as SEL button on the mini remote commander

Before Using the Remote Commanders

Battery life

Normal operation can be expected for about a half year using Sony SUM-3(NS) batteries. The more frequently you turn on the buttons' illumination (of the Mini remote commander), the shorter the life becomes. When the batteries are exhausted, the remote commander can no longer operate the unit. If this happens, replace both batteries with new ones.

Replacing batteries



Insert two size AA (IEC R6) batteries with correct polarity.

To avoid damage caused by battery leakage and corrosion

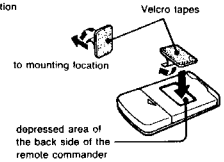
When the commander will not be used for a long time, remove the batteries.

Function of Controls

For assembly and connection, refer to the separate "Installation / Connections."

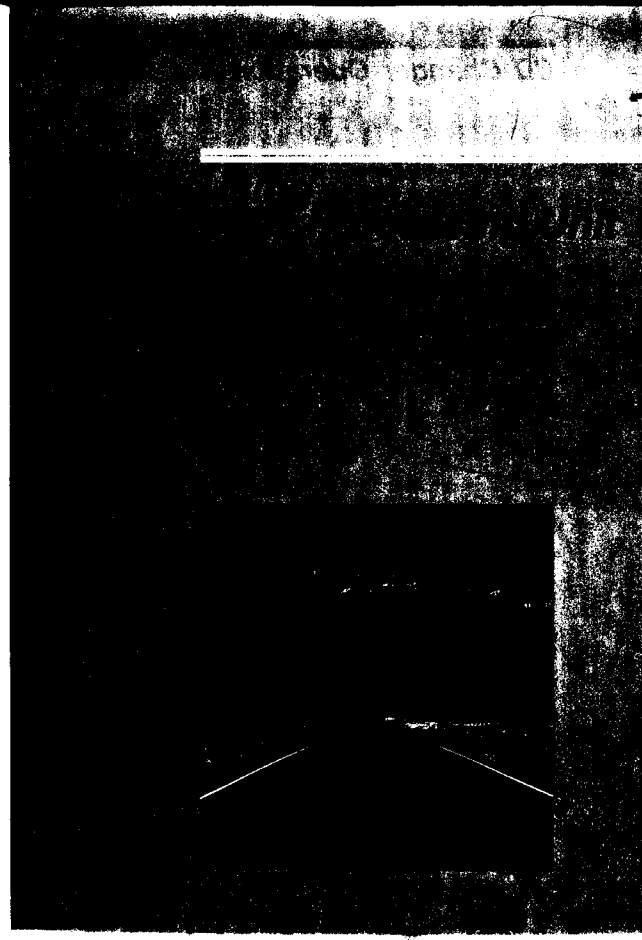
Installing the Remote Commander

Fasten one of the supplied velcro tapes to the depressed area of the back side of the remote commander, and another to a mounting location in the car.



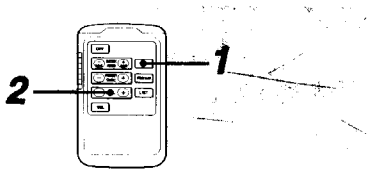
When Mounting the Commander

- Do not install or leave the commander on the dashboard, steering wheel, or any other places under direct sunlight; otherwise, it may become deformed by the heat — especially in the hot summer.
- When you park your car, make sure the commander is away from direct sunlight. Remove the commander and store it, for example, in the glove box.
- Before the installation, choose a location where your commander can function properly. This can be verified by placing the commander at that location to see if it can correctly control the main unit or not.
- Clean the surface of the mounting location before attaching the velcro tape to it.

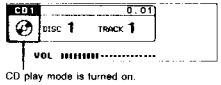


CD Changer Operation

When an optional CD changer (such as Sony XES-C1) is connected
(See "Installation/Connections" on how to connect the CD changer.)



1 **Press [CD].**
Power is automatically turned on and play starts.

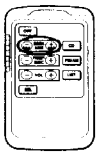


CD play mode is turned on.

2 **Press [– VOL +] to adjust the sound volume.**
- **Press [+] to increase the volume.**
- **Press [–] to decrease the volume.**

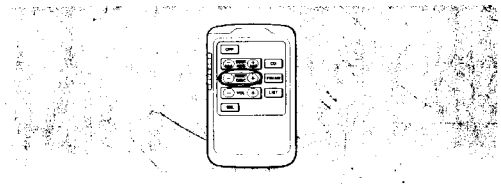
To turn the power off press [OFF].

Choosing Selection to Play



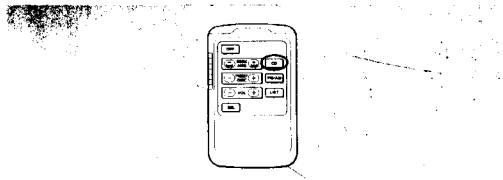
- **Press [⏮] to go to the beginning of the current selection.**
- **Keep pressing [⏮] to go to the previous selections.**
- **Press [⏭] to go to the next selection.**
- **Keep pressing [⏭] to go to the one after next selection.**

Selecting Disc in the CD Changer



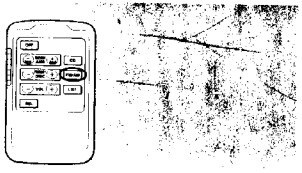
- **Press [+] to go to the next disc.**
- **Press [–] to go to the previous disc.**

Changing CD Changer
(When two or more CD changers are connected)



- **While a disc is being played, press [CD].**

Changing Mode from CD to Radio

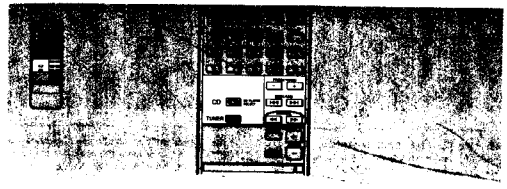


• Press FM/AM to stop CD play and listen to a radio broadcast.

Various Play Modes

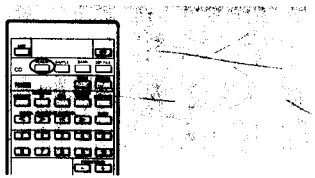
Operation can only be done using the full remote commander.
Various play modes are available for the CD play.

Manual Search



• Press ▶▶ to go ahead at high speed.
• Press ◀◀ to go back at high speed.

Repeat Play



While the CD is being played, pressing REPEAT continuously enables you to select to play the same selection, or the same disc, or the same magazine repeatedly, as indicated in the following cycle.

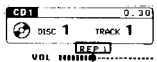
→ REP1 (repeat the same selection) → REP2 (repeat the same disc) → REP3* (repeat the same changer) → OFF (release repeat play) →

* REP3 (repeat the same changer) functions only when two or more CD changers are connected. When only a CD changer is connected, "REP3" will be skipped.

Repeating the current selection (REP1)

• While the CD is being played, press REPEAT to display "REP1".

When the current selection is finished, it will be started over again from the beginning of the selection.

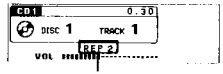


"REP1" is displayed.

Repeating the current disc (REP2)

• While the CD is being played, press REPEAT to display "REP2".

When all selections on the current disc are finished, they will be started all over again from the beginning of the disc.

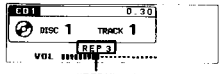


"REP2" is displayed.

Repeating the currently selected changer (REP3-available only when two or more CD changers are connected)

• While the CD is being played, press REPEAT to display "REP3".

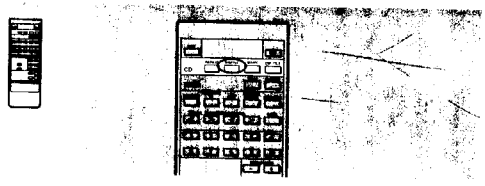
When all selections of all the discs in the current changer are finished, the CD changer will move back to the first disc in the magazine and start all over again.



"REP3" is displayed.

The repeat play is not canceled by turning off the unit. To cancel the repeat play, press REPEAT until it is released (OFF).

Shuffle Play



While the CD is being played, pressing [SHUFFLE] enables you to randomly play the selections on the disc, the magazine, or the CD changers (if connected two or more), as indicated in the following cycle.

→ SHUF1 (shuffle selections on a disc) → SHUF2 (shuffle selections in the magazine) → SHUF3* (shuffle selections in all CD changers) → OFF (release shuffle play) →

* SHUF3 (shuffle selections in all CD changers) functions only when two or more CD changers are connected. When only a CD changer is connected, "SHUF3" will be skipped.

Playing selections on a disc in random order (SHUF1)

• While the CD is being played, press [SHUFFLE] to display "SHUF1".

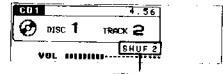
All selections on the current disc will be played at a random order. When they are finished, the next disc will be played.

"SHUF1" is displayed.

Playing selections in same magazine in random order (SHUF2)

• While the CD is being played, press [SHUFFLE] to display "SHUF2".

All selections on all discs in the current magazine will be played at a random order.



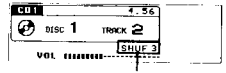
"SHUF2" is displayed.

Playing selections in all CD changers in random order (SHUF3)

(Available only when two or more optional CD changers are connected.)

• While the CD is being played, press [SHUFFLE] to display "SHUF3".

All selections on all discs in all CD changers will be played at a random order.



"SHUF3" is displayed.

Combining repeat and shuffle play

You can also combine the repeat and shuffle functions.

Repeat disc (REP2) — Shuffle selections on a disc (SHUF1)

Repeat changer (REP3) — Shuffle selections on a disc (SHUF1) / Shuffle selections in the magazine (SHUF2)

Press both [REPEAT] and [SHUFFLE] to select the desired combination.

The shuffle play is not canceled by turning off the unit or the car battery power. To cancel the shuffle play, press [SHUFFLE] until "SHUFFLE" disappears.

Playing only the Desired Selections (BANK Function)

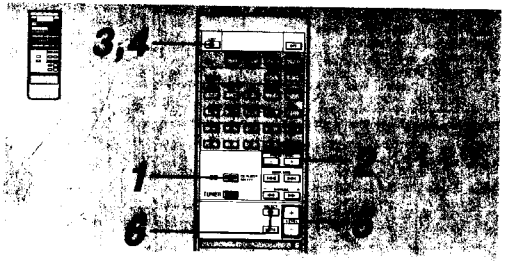
Operation can only be done using the full remote commander.

The BANK function allows you to select and register only selections you want to hear on a particular disc. The registered information is stored in the memory and not lost even when power is turned off. When this disc is played the next time, only the registered selections will be played.

Note: The BANK function is valid only for the CDs registered in the custom file (page 29).

Registering selections

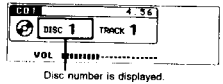
If you want to stop registration halfway, press [LIST] for more than 2 seconds.



1 **Press [CD].**
Play of a disc starts.

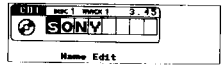
CD play mode is turned on.

2 **Press [– PRESET/DISC +] to select disc for BANK registration.**
- **Press [+] for the next disc.**
- **Press [–] for the previous disc.**

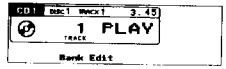


Disc number is displayed.

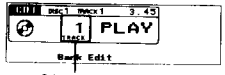
3 **Press [LIST] for more than 2 seconds.**
The custom file registration mode is turned on.



4 **Press [LIST].**
The BANK registration mode is turned on.

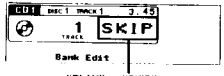


5 **Press [⏮ SEEK/AMS ⏭] to choose the selection.**
- **Press [⏭] to move to the next selection.**
- **Press [⏮] to move to the previous selection.**



Selection (track) number is displayed.

6 **Press [SELECT] to select to play (PLAY) or not to play (SKIP) this selection.**
Pressing [SELECT] continuously toggles between the PLAY and SKIP options.



"PLAY" or "SKIP" is displayed.

7 **Repeat steps 5 and 6 to select other music on the same disc for registration.**

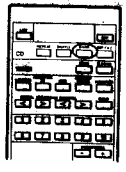
When registration is done, or if you want to stop halfway
- **Press [LIST] for more than 2 seconds.**

CD play mode returns.

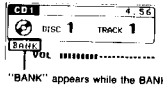
Playing Only the Desired Selections (BANK Function)

BANK function

Operation can only be done using the full remote commander.



• While the CD is being played, press [BANK].
Pressing [BANK] once turns the BANK function ON, pressing it again turns the function OFF.



"BANK" appears while the BANK function is activated.

Creating Custom Files

What Is Custom File?

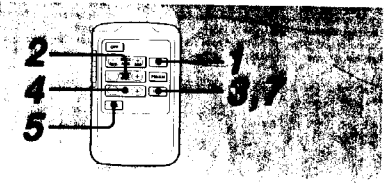
The XES-P1 gives you an option to entitle electronically each disc (for up to 110 discs for a changer connected). You can use the title to describe the disc — e.g. type of music, composer, etc. Then, when the disc is played, the title will appear in the display window to give you more descriptive information about the disc.
A custom file is a collection of all the titles. You can create titles using up to 8 characters or symbols from the below table.

Usable characters and symbols for custom file (45 characters/symbols)

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9 + − * / \ > < . (space)

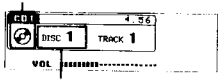
Registering Disc Title

If you want to stop registration halfway, press [LIST] for more than 2 seconds.



1 **Press [CD].**

CD play mode is turned on.



Disc number is displayed.

2 **Press [– PRESET/DISC +] to select disc for entitling.**

3 **Press [LIST] for more than 2 seconds.**
Custom file registration mode is turned on.

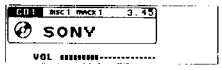
The cursor appears at the position ready for input.

4 **Press [– VOL +] to select character or symbol to input as the name of your disc title.**
- **Press [+] to go to the next character or symbol.**
- **Press [–] to go to the previous character or symbol.**

5 **Press [SEL] to input the selected character or symbol, and move the cursor to the next position for input.**

6 **Repeat steps 4 to 5 to complete the title.**

7 **Press [LIST] for more than 2 seconds.**
CD play mode returns, and registration is completed.
When you play this disc, the title will be displayed.



To change the disc title

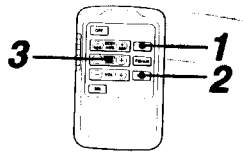
Follow the same procedure as for registering the disc title.

To erase the disc title

When the memory is full and no more titles can be stored, erase unnecessary titles before registering new ones.

1 Press [LIST] for more than 2 seconds.
Custom file registration mode is turned on.
2 While pressing [SELECT], press [9] (one of the numeric buttons).
"Name Erase Mode" is displayed.
3 Press [– LEVEL +] to select the disc title to be erased.
4 Press [SELECT] for more than 2 seconds.
The selected disc title is erased.
5 While pressing [SELECT], press [9] (one of the numeric buttons).
Custom file registration mode returns.
6 Press [LIST] for more than 2 seconds.
CD play mode returns.

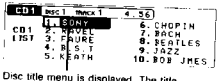
Playing by a Disc List



See page 30 on entitling disc.

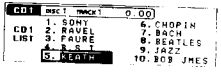
1 **Press [CD].**
CD play mode is turned on.

2 **Press [LIST].**
If no CD is set in the magazine, nothing but only numbers are displayed. If a CD with no disc title is set, "******" is displayed at the disc title position.



Disc title menu is displayed. The title of the disc being played is reversed.

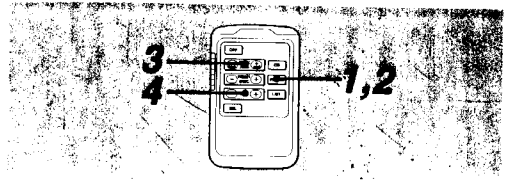
3 **Press [+ PRESET/DISC −] to select the entitled disc you want to play.** (You can also select directly by pressing the corresponding numeric button on the full remote commander.)
The selected title will be reversed.



Radio Operations

(This applies only if the optionally available tuner, such as XES-T1, is connected. Refer to "Installation/Connection" for how to connect the tuner.)

Automatic Tuning

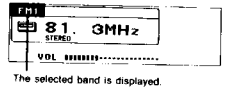


1 **Press [FM/AM].**
Power is turned on and the equipment enters radio reception mode.

Radio reception mode

2 **Press [FM/AM] to select the desired band.**
Pressing [FM/AM] continuously will cycle through

FM1 → FM2 → AM



The selected band is displayed.

3 **Press [◁◁ SEEK/AMS ▷▷] to select the desired station.**
- **Press [▷▷] to move to higher frequency stations.**
- **Press [◁◁] to move to lower frequency stations.**

The XES-P1 automatically seeks the next station that can be received, and stays there until you press the buttons again. Repeat the above steps until you find the station you want. If you press the button while the XES-P1 is seeking, the previously tuned station will be tuned again.

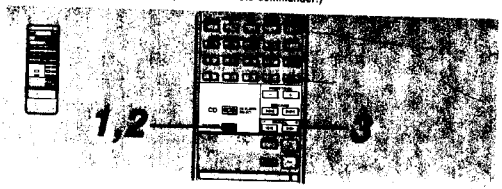
4 **Press [− VOL +] to adjust sound volume.**
- **Press [+] to increase volume.**
- **Press [−] to decrease volume.**

To turn the power off Press [OFF].

(This applies only if the optionally available tuner, such as XES-T1, is connected. Refer to "Installation/Connection" for how to connect the tuner.)

Manual Tuning

(Operation can only be done using the full remote commander.)



1 **Press [TUNER BAND].**
Power is turned on and the equipment enters radio reception mode.

2 **Press [TUNER BAND] to select the desired band.**
Pressing [TUNER BAND] continuously will cycle through

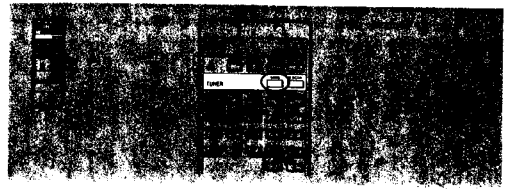
┌ FM1 → FM2 → AM ┐

3 **Press [◄◄ MANUAL ►►] to select the desired station.**
- **Press [►►] to move to higher frequency stations.**
- **Press [◄◄] to move to lower frequency stations.**

To prevent accidents
When you are driving, we recommend you not to use the manual tuning method, but resort to either best tuning memory or automatic tuning method.

Adjusting Reception Sensitivity

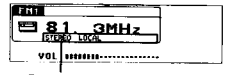
(Operation can only be done using the full remote commander.)



- **While listening to the radio, press [SENS] to select the reception level.**

Four reception levels are available for selection.
Pressing [SENS] continuously cycles through

┌ STEREO LOCAL → MONO ┐
└ STEREO ←──────────┘



The selected reception level is displayed.

Choose:
STEREO LOCAL: when there are many stations and you want to cut out those with poor reception
MONO: when FM reception is poor
STEREO: for normal situation

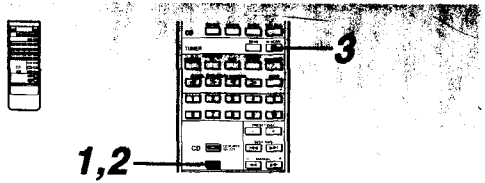
(This applies only if the optionally available tuner, such as XES-T1, is connected. Refer to "Installation/Connection" for how to connect the tuner.)

You can register up to a total of 30 stations — 10 stations each for FM1, FM2, and AM.

Memory Preset Tuning

Memorizing the stations automatically (BTM: Best Tuning Memory)

(Operation can only be done using the full remote commander.)



1 **Press [TUNER BAND].**
Power is turned on and the equipment enters radio reception mode.

2 **Press [TUNER BAND] again to select the desired band.**
Pressing [TUNER BAND] continuously will cycle through

→ FM1 → FM2 → AM →

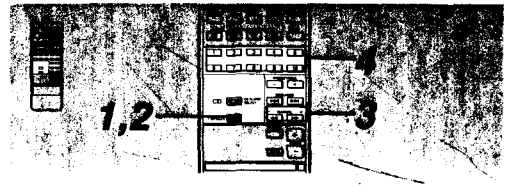
3 **Press [M.SCAN] for more than 2 seconds.**
The XES-P1 automatically starts scanning from the lowest frequency, seeks the station that can be received, and "remembers" it. It then moves on until 10 stations have been registered.

Using BTM
Scanning starts from the lowest frequency in the currently selected band. When the commander finds a station, it will store it to the preset number displayed in the window, or to the next available preset number starting from 1. Even when all the preset numbers are used up, it will continue the scanning, and if it finds a station with reception better than the registered ones, it will replace the registered one with the new one. This process goes on until all of the number contains registered **stations with the best reception.**

Finally, all the registered stations are recordered and reassigned to the buttons, starting from the one with the lowest frequency — button 1.

Note
If the number of available stations is small or the radio signals are weak, then BTM may end before all buttons are used up.

Memorizing the desired stations manually



1 **Press [TUNER BAND].**
Power is turned on and the equipment enters radio reception mode.

2 **Press [TUNER BAND] again to select the desired band.**
Pressing [TUNER BAND] continuously will cycle through

→ FM1 → FM2 → AM →

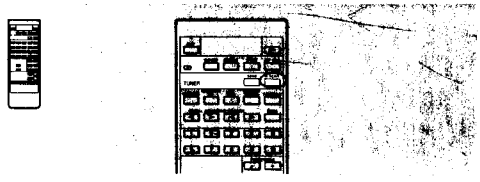
3 **Press [◄◄ MANUAL ►►] button to select the desired station.**
- **Press [►►] to move to higher frequency stations.**
- **Press [◄◄] to move to lower frequency stations.**

4 **Press the numeric button you want to assign the selected station to for more than 2 seconds.**
When a beep tone is heard for the second time, manual assignment is finished. The number of stations you can assign to the 10 numeric buttons is the same as in best tuning memory — that is, 10 stations for each band.

(This applies only if the optionally available tuner, such as XES-T1, is connected. Refer to "Installation/Connection" for how to connect the tuner.)

Memory Preset Tuning

Surveying what is being broadcast on the preset stations (memory scan)

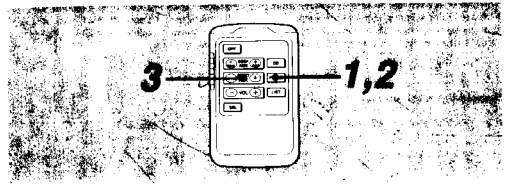


• Press [M.SCAN].
The XES-P1 scans the "remembered" stations. Each "remembered" station is tuned in for 5 seconds. (However, some "remembered" stations may not be received if their radio signal is weak.)

During the memory scan, if you want to force the XES-P1 to stay in the tuned station, press [M.SCAN]. This will release the scan and so the XES-P1 will not move to the next station.

Note
If you keep pressing [M.SCAN] for more than 2 seconds, the station will be memorized.

Receiving a Preset Station



If you have registered stations, you can retrieve them as below. (See pages 36 and 37 on registering stations.)

1 **Press [FM/AM].**
Power is turned on and the equipment enters radio reception mode.

2 **Press [FM/AM] again to select the desired band.**
Pressing [FM/AM] continuously will cycle through

→ FM1 → FM2 → AM →

3 **Press [+PRESET/DISC−] to select the desired station.**
• Press [+] to go to the next station.
• Press [−] to go to the previous station.

To stop radio reception and start CD play
• Press [CD].

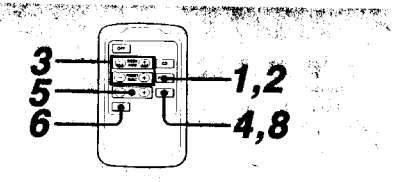
Creating Custom Files for Radio Stations

What Is Custom File?

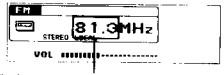
You can label each station with a name of up to 8 characters or symbols, using the characters/symbols table on page 29. A collection of stations labels constitutes a custom file; each custom file can handle up to a total of 30 station labels - 10 each for FM1, FM2, and AM bands. When a registerede station is tuned in, its label is displayed.

Registering a station label

If you want to stop registration halfway, press [LIST] for more than 2 seconds.



1 **Press [FM·AM].**
Radio reception mode is turned on.



The frequency of the tuned station is displayed.

2 **Press [FM·AM] to select the desired band.**
Pressing [FM·AM] continuously will cycle through

[FM1 → FM2 → AM]

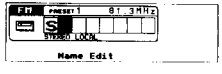
3 **Press [◄◄ SEEK/AMS ►►] or [– PRESET/DISC +] to select the desired station.**

4 **Press [LIST] for more than 2 seconds.**
The station title file registration mode is turned on.

The cursor appears at the position ready for input.

5 **Press [– LEVEL +] to select character or symbol to input as the name of your station title.**
- **Press [+] to go to the next character or symbol.**
- **Press [–] to go to the previous character or symbol.**

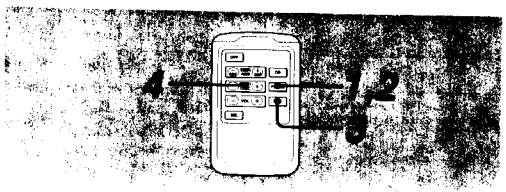
6 **Press [SEL] to input the selected character or symbol, and move the cursor to the next position for input.**



7 **Repeat steps 5 to 6 to complete the title.**

8 **Press [LIST] to end the registration for more than 2 seconds.**
The XES-P1 will return to the radio reception mode.
The next time when you select this station, its title will be displayed.

Tuning by a station List



See page 40 on how to create a station title.

1 **Press [FM/AM].**
Radio reception mode is turned on.

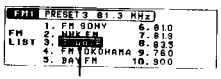
2 **Press [FM/AM] to select the desired band.**
Pressing [FM/AM] continuously will cycle through

FM1 → FM2 → AM

3 **Press [LIST].**
If no station title is assigned, the station frequency is displayed instead.

Station label menu is displayed.

4 **Press [– PRESET/DISC +] to select the desired station.**



The selected station is reversed.

To return to the normal display
Press [LIST].

Digital Sound Effects for Creating Optimum Acoustics

What is Digital Signal Processor (DSP)?

The Digital Signal Processor of this equipment consists of:
- P.EQ (Parametric Equalizer) — for fine adjustment of sound quality
- SUR (Surround Processor) — for creating and adjusting reflected and reverberative sounds
- DRS (Dynamic Range Suppressor) — for adjusting the controllable dynamic range of the program source

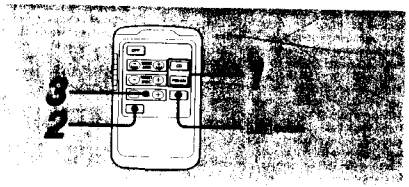
Using these three digital sound effects, you can simulate various acoustic situations in your listening environment.
Because program sources are processed in their original digital form, loss of sound quality is very small and high fidelity can be maintained.

Ten soundfield programs (recommended combinations of each setting) have already been preset in the Digital Sound menu. By choosing, for example, HALL1 effect, you can get the feel of being in a shoe-box type concert hall even though you are actually driving in a car.
You can, of course, create and register your own original soundfield programs by combining and modifying the P.EQ, SUR and DRS parameters.
(See pages 49 to 83 on modifying and registering DSP.)

Digital sound menu

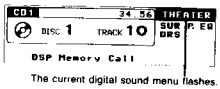
1	**HALL1**	A shoe-box type concert hall
2	**HALL2**	A wine yard type concert hall
3	**OPERA**	An opera house
4	**CHURCH**	A place, such as church, with a lot of reverberative sound
5	**JAZZ CLUB**	A jazz club located at the basement
6	**DISCO**	A disco with thick wall and floor
7	**STADIUM**	A concert in an open-air stadium
8	**LIVE CONCERT**	A live concert with over 10,000 audience
9	**THEATER**	A movie theater
10	**SMALL HALL**	A small hall for instrumental solo

Adding Digital Sound Effects



1 **Press |CD| to start CD play, or |FM/AM| to start radio reception.**

2 **Press |SEL|.**



The current digital sound menu flashes.

• **Press |LIST| to see the digital sound menu.**
Digital Sound menu is displayed.

3 **Press |– VOL +| to select the desired soundfield program.**
• **Press |+| to move to the next program.**
• **Press |–| to move to the previous program.**
While the Digital Sound menu is displayed, you can also press the corresponding numeric button on the full remote commander for direct selection.

To return to the play mode
Press |LIST|.
If you do not want to add digital sound effects
Press |SURROUND|, |PARAMETRIC EQ| and |DRS|. Each press turns on and off the SUR, P.EQ and DRS respectively.

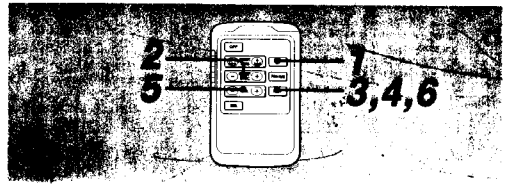
DSP File

What Is DSP File?

You can select from the digital sound menu the type of digital sound effect you like to add to a particular disc, and store this information to a custom file. This process is called DSP File. Then, whenever you load this disc, it will be played with the registered digital sound effect.

Note
The DSP File function is valid only for the discs to which disc titles are registered.

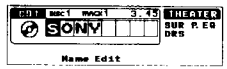
Registering DSP File



1 **Press |CD| to start play of a CD.**

2 **Press |– PRESET/DISC +| to select the disc.**

3 **Press |LIST| for more than 2 seconds.**
The custom file registration mode is turned on.

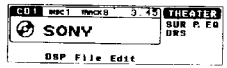


to be continued ▷

Registering DSP File

Continued

4 **Press [LIST] twice.**
The DSP file registration mode is turned on.

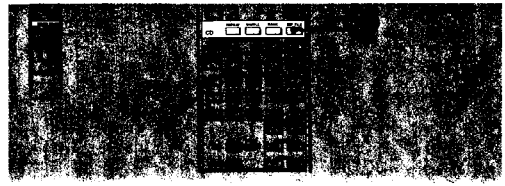


5 **Press [– VOL +] to select the desired item.**

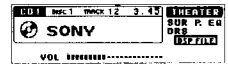
6 **Press [LIST] for more than 2 seconds.**
When a beep tone is heard for the second time, the sound effect is attached to the current disc and the information is stored to the custom file, and the play mode returns.

Playing with DSP File

Operation can only be done using the full remote commander.



1 **Register the DSP file.**
See page 45 on how to register the DSP file.



2 **Press [DSP FILE].**
The DSP file mode is turned on.

To disable DSP file mode
• **Press [DSP FILE].**
The DSP FILE indicator goes off, and the XES-P1 returns to the normal play mode.

Playing with the Same DSP Mode — LSM (Last Sound Memory) Function

Operation can only be done using the full remote commander.

The unit stores the selected digital sound menu for each program source when the LSM function is activated

When the power is turned on, or when the program source is changed from one to another, the source is played with the digital sound menu stored for it.

To turn on/off the LSM function

- While pressing [SELECT], press [?] (one of the numeric buttons).

When the Last Sound Memory function is on, "LSM" is displayed.

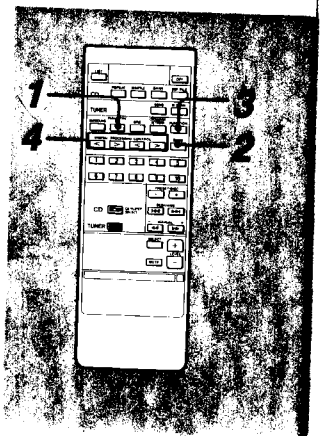
Doing so turns on and off the LSM function.

Using Digital Parametric Equalizer (P.EQ)

What Is P.EQ?

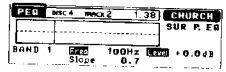
- P.EQ is a tone control system with adjustable level, center frequency and slope (Q). The XES-P1 provides flexible equalization using a 6-band parametric equalizer with independent control of level, center frequency, and slope.
- When listening in the car, you can use P.EQ parameters to mask the unpleasant sound effect and add your original soundfield effects to turn your car into your favorite type of audio room.
- When you select the digital sound menu to be adjusted and turn on the P.EQ adjustment mode (see next page), "P.EQ" is displayed. Replay the program source (CD or radio) and adjust the P.EQ while listening to the program source. This allows you to obtain the best sound effect. We recommend you to immediately register the adjusted parameters. See page 80 on registration.

Adjusting P.EQ

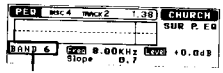


To cancel adjustment during operation, press [PARAMETRIC EQ] for more than 2 seconds.

1 **Press [PARAMETRIC EQ] for more than 2 seconds.**
The P.EQ adjustment mode is turned on.

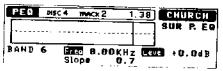


2 **Press [BAND] to select band to be adjusted.**
There are a total of 6 bands. Pressing [BAND] continuously will change the band from BAND1 to BAND6.

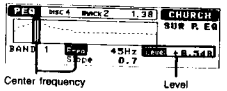


3 **Press [FUNCTION] and select Freq and Level.**
Pressing [FUNCTION] will alternate between the following two selections:

Freq, Level↔Slope, Level

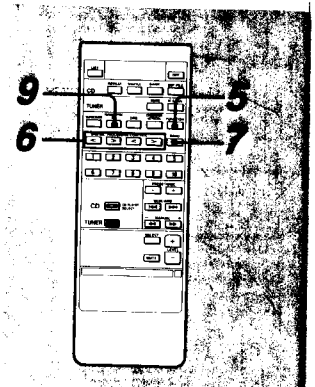


4 **Press [DIGITAL PROCESSING CONTROL] to select center frequency and adjust the level.**
- **Press [<] [>] [<] [>] to shift center frequency up.**
- **Press [<] [>] [<] [>] to shift center frequency down.**
- **Press [<] [>] [<] [>] to increase level of center frequency.**
- **Press [<] [>] [<] [>] to decrease level of center frequency.**



to be continued ‹ ›

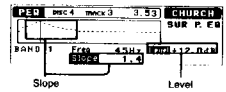
Adjusting P.EQ



Continued

5 **Press [FUNCTION].**
The slope adjustment mode is turned on.
Pressing [FUNCTION] continuously will cycle through
Slope adjustment mode → center frequency selection mode

6 **Press [DIGITAL PROCESSING CONTROL] to adjust slope.**
- **Press [◁][▷][◁][▷] to decrease the angle of slope.**
- **Press [◁][▷][◁][▷] to increase the angle of slope.**
- **Press [◁][▷][◁][▷] to decrease the center frequency level.**
- **Press [◁][▷][◁][▷] to increase the center frequency level.**



7 **When there are still other frequency bands to be adjusted**
Press [BAND]

8 **Repeat steps 3 to 7 until desired equalization curve is obtained.**

9 **When P.EQ adjustment is finished**
Press [PARAMETRIC EQ] for more than 2 seconds.
XES-P1 returns to CD play mode.

To see if P.EQ is in effect
Press [PARAMETRIC EQ].
When the effect is on, P.EQ appears in the display window. When the effect is off, P.EQ goes off.
Listen to the play sound with and without the P.EQ effect to check how the P.EQ modifies the sound.

P.EQ is displayed when the P.EQ is in effect.

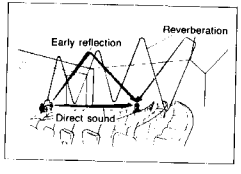
Using Digital Surround Processor (SUR)

What Is SUR?

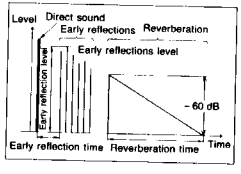
The sound you hear in a place such as a concert hall or a movie theater consists of direct sound, early reflections and reverberation. The acoustics of the room affect the way these three sounds are heard. We can estimate the size or the type of a hall by listening to and differentiating these three kinds of sound.

The XES-P1 reproduces the early reflections and the reverberation using its digital signal processor and allows you to design a variety of soundfields in a car.
The unit incorporates 10 types of surround modes, and within each mode, you can adjust several parameters to maximize the effect in your listening environment.

Types of the sound



Transition of the sound



Adjustable parameters list

REVERB Time, Dens	Simulation of reverberation time and density
E.REF Time, Lvl	Simulation of early reflection time and level
S.POS F-R, L-R	Simulation of listening position
ROOM Size, Wall	Simulation of room size and wall material
EFFECT Sprd, Lvl	Simulation of spread and level of reflected sound and reverberation
REAR Lvl	Simulation of reflection from the rear

Adjusting SUR Parameters

- Select the digital sound menu to be adjusted, and press [SURROUND] for more than 2 seconds. The SUR adjustment mode is turned on. Press [FUNCTION] to select the parameter to be adjusted. (The selected parameter is reversed in the display window.) Pressing [FUNCTION] continuously will cycle through

  ┌ REVERB → E.REF → S.POS → ROOM
  └ EFFECT ← REAR ┘

- When you turn on the SUR adjustment mode, "SUR" is displayed. Replay the program source (CD or radio) and adjust the SUR while listening to the program source. This allows you to obtain the best sound effect.
- We recommend you to immediately register the adjusted parameters. See page 80 on registration.
- When [SURROUND] is pressed, no signal is output from the rear of the XES-P1.
- When you listen to a source such as news or dramas, we recommend you select JAZZ mode or THEATER mode and adjust the parameters as follows:

  E.REF: 1ms
  S.POS: R50
  ROOM: 0.5
  WALL: 0.5

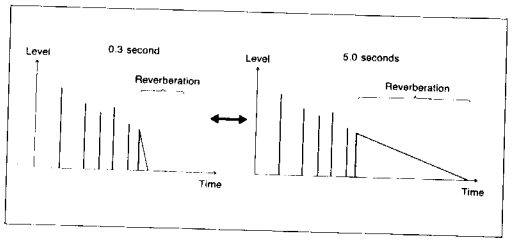
You can hear clear sound with little reverberation from the four speakers if you make these adjustments.
When you listen to using only two speakers, set SUR to "OFF" or set EFFECT LEVEL to "0".

Adjusting SUR Parameters

Reverb Time

This parameter adjusts the length of the reverberation — the time required for reverberative sound to decrease to −60 dB. The adjustable range is from 0.3 to 5.0 seconds.

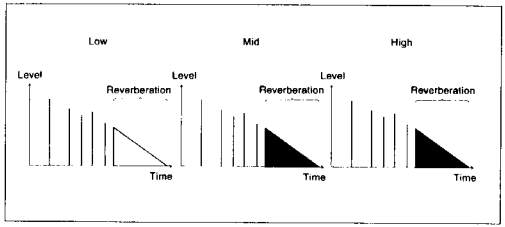
(This parameter cannot be adjusted with the digital sound menu JAZZ CLUB, DISCO, THEATER, and SMALL HALL.)



Reverb Density

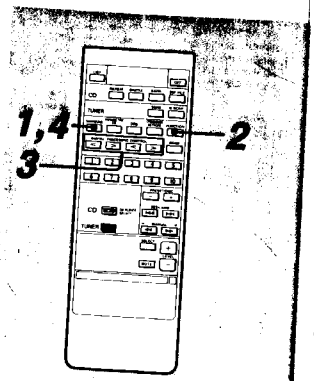
The reverberation density parameter adjusts the density (number of responses) of the reverberation to obtain natural reverberation for various program sources. Usually, set this parameter to Mid (middle). When the program source itself is very reverberative, like a live recording, set it to Low; set it to High when the program source is not reverberative.

(This parameter cannot be adjusted with the digital sound menu JAZZ CLUB, DISCO, THEATER, and SMALL HALL.)



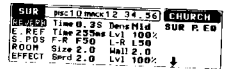
Adjusting SUR Parameters

Adjusting reverb time and reverb density



If you want to cancel the adjustment halfway, press [SURROUND] for more than 2 seconds.

1 Press [SURROUND] for more than 2 seconds.
SUR adjustment mode is turned on.

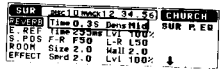


2 Press [FUNCTION] to select REVERB.

"REVERB" is reversed.

3 Press [DIGITAL PROCESSING CONTROL] to adjust each parameter.

- Press [◁][▷][◁][▷] to decrease reverb time.
- Press [◁][▷][◁][▷] to increase reverb time.
- Press [◁][▷][◁][▷] to decrease reverb density.
- Press [◁][▷][◁][▷] to increase reverb density.

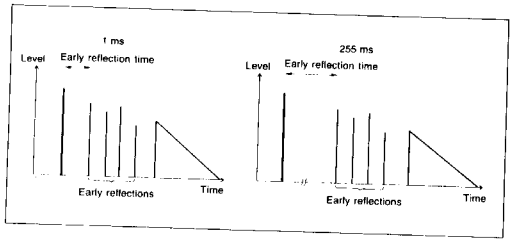


4 When adjustment is finished
Press [SURROUND] for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting SUR Parameters

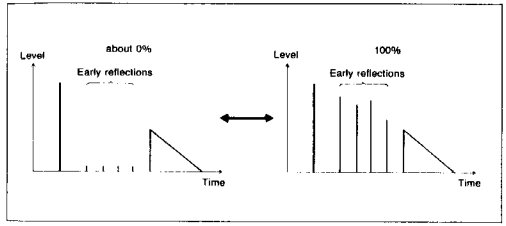
Early Reflection time

The early reflection time is the key parameter which simulates the room size and listening position. Adjustment of this parameter will vary the time required for the sound to reach the listening position. The adjustable range is from 1ms to 255ms, and the longer the time, the longer you will feel the distance to the origin of the sound.



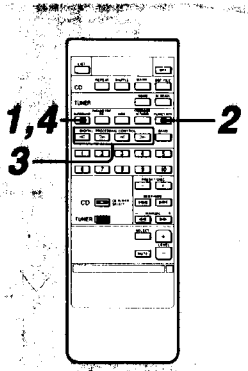
Early Reflection level

The early reflection level simulates the acoustic liveness of the listening room. The adjustable range is from 0 to 100%; the higher the percentage, the better liveness you can feel. When it is small, you will feel the room "dead". (This parameter cannot be adjusted with the digital sound menu JAZZ CLUB, DISCO, THEATER, and SMALL HALL.)



Adjusting SUR Parameters

Adjusting early reflection time and level

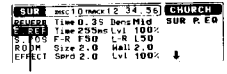


If you want to cancel the operation halfway, press SURROUND for more than 2 seconds.

1 **Press SURROUND for more than 2 seconds.**
SUR adjustment mode is turned on.

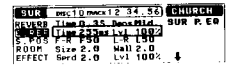
SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 255ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

2 **Press FUNCTION once to select E.REF.**


SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 255ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

"E.REF" is reversed.

3 **Press DIGITAL PROCESSING CONTROL to adjust each parameter.**
- **Press ◁▷◁▷ to decrease early reflection time.**
- **Press ◁▷◁▷ to increase early reflection time.**
- **Press ◁▷◁▷ to decrease early reflection level.**
- **Press ◁▷◁▷ to increase early reflection level.**

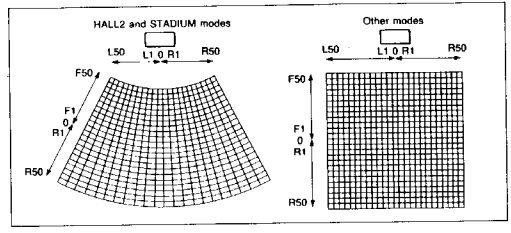

SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 255ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

4 **When adjustment is finished**
Press SURROUND for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting SUR Parameters

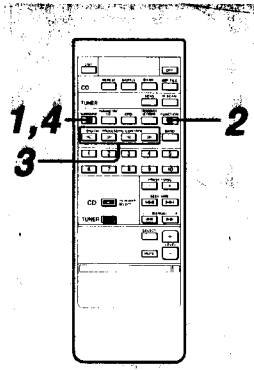
Seat position

When you sit in the front of a room, you will hear more of the direct sound from the front speakers. As you move toward the back of the room, the component of reflected sounds from the front speakers grows. Similarly, the component of reflected sound changes as you move from the left side of the room to the right side. The SEAT POSITION parameter controls the balance of the direct sound and reflected sound to simulate your listening position. With the center position designated as 0 for both front-rear and left-right parameters, you can adjust the position in 50 increments in each direction.



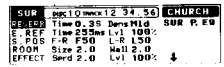
Adjusting SUR Parameters

Adjusting seat position

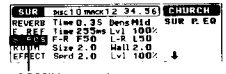


If you want to cancel the operation halfway, press [SURROUND] for more than 2 seconds.

1 **Press [SURROUND] for more than 2 seconds.**
SUR adjustment mode is turned on.

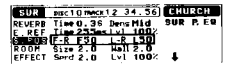

SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Send 2.0 Lvl 100%
SUR P. EQ

2 **Press [FUNCTION] to select S.POS.**


SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Send 2.0 Lvl 100%
SUR P. EQ

"S.POS" is reversed.

3 **Use [DIGITAL PROCESSING CONTROL] to adjust each parameter.**
- **Press [◁][▷][◁][▷] to move seat position to the front.**
- **Press [◁][▷][◁][▷] to move seat position to the rear.**
- **Press [◁][▷][◁][▷] to move seat position to the left.**
- **Press [◁][▷][◁][▷] to move seat position to the right.**


SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Send 2.0 Lvl 100%
SUR P. EQ

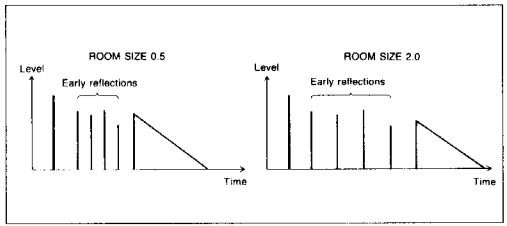
4 **When adjustment is finished**
Press [SURROUND] for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting SUR Parameters

Room size

The sound emitted from a sound source is reflected many times between the left and right walls, ceiling, and floor before it reach our ears. In a large room, the sound takes more time to bounce from one surface to another than in a smaller room.

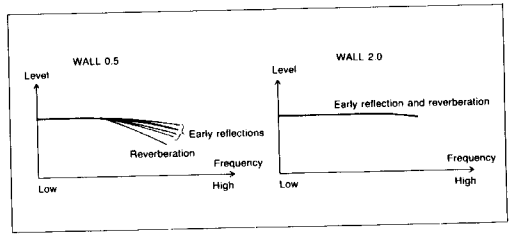
The ROOM SIZE parameter controls the spacing of early reflections to simulate the room size. Using 1.0 for standard room size, you can adjust this parameter from 0.5 to 2.0. The larger the value, the larger the size of the room simulated.



WALL (wall material)

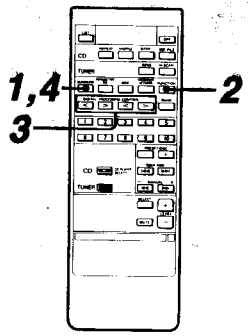
When sound is reflected by a wall made of soft material such as wood or a wall covered with a curtain, the high-frequency components are reduced. A hard wall is highly reflective and does not significantly effect the frequency response of the reflected sound.

The WALL parameter controls the level of high frequencies to simulate the wall material. Using 1 for standard wall made of wood, you can adjust this parameter from 0.5 to 2.0. The larger the value, the harder the wall simulated.



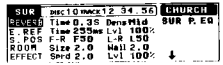
Adjusting SUR Parameters

Adjusting room size and wall material

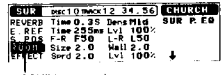


If you want to cancel the operation halfway, press [SURROUND] for more than 2 seconds.

1 **Press [SURROUND] for more than 2 seconds.**
SUR adjustment mode is turned on.

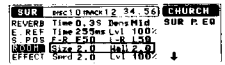

SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

2 **Press [FUNCTION] to select ROOM.**


SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

"ROOM" is reversed.

3 **Press [DIGITAL PROCESSING CONTROL] to adjust each parameter.**
- **Press [◁][▷][◁][▷] to decrease room size.**
- **Press [◁][▷][◁][▷] to increase room size.**
- **Press [◁][▷][◁][▷] to soften wall material.**
- **Press [◁][▷][◁][▷] to harden wall material.**

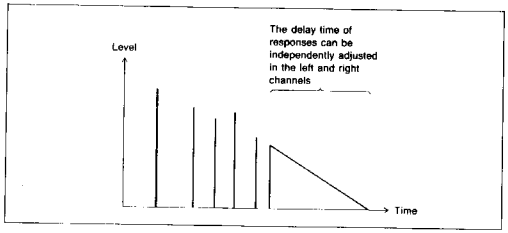

SUR
DISC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 25ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

4 **When adjustment is finished**
Press [SURROUND] for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting SUR Parameters

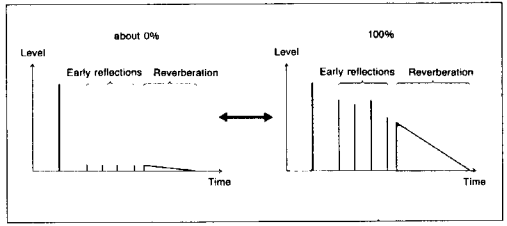
Effect spread

The effect spread parameter adjusts the delay time of the responses in reverberation from the left and right channels to simulate the width of the soundfield. With 1 as the standard value, the adjustable range is from 0.5 to 2.0. The larger the value, the wider the soundfield. (This parameter cannot be adjusted with the digital sound menu JAZZ CLUB, DISCO, THEATER, and SMALL HALL.)



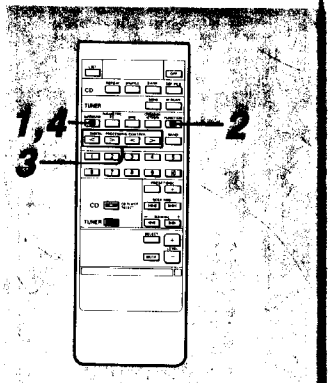
Effect level

This parameter adjusts the level of early reflections and reverberation. The adjustable range is from 0 to 100%; the higher the percentage, the better the liveness you can feel. When it is small, you will feel the room "dead".



Adjusting SUR Parameters

Adjusting effect spread and level

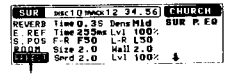


If you want to cancel the operation halfway, press [SURROUND] for more than 2 seconds.

1 **Press [SURROUND] for more than 2 seconds.**
SUR adjustment mode is turned on.

SUR
REC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 235ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

2 **Press [FUNCTION] to select EFFECT.**


SUR
REC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 235ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

"EFFECT" is reversed.

3 **Use [DIGITAL PROCESSING CONTROL] to adjust each parameter.**
- **Press ◁ ▷ ◁ ▷ to decrease effect spread.**
- **Press ◁ ▷ ◁ ▷ to increase effect spread.**
- **Press ◁ ▷ ◁ ▷ to decrease effect level.**
- **Press ◁ ▷ ◁ ▷ to increase effect level.**

SUR
REC 1 0 TRACK 1 2 34.56
CHURCH
REVERB Time 0.3S Dens Mid SUR P. EQ
E.REF Time 235ms Lvl 100%
S.POS F-R F50 L-R L50
ROOM Size 2.0 Wall 2.0
EFFECT Sprd 2.0 Lvl 100%

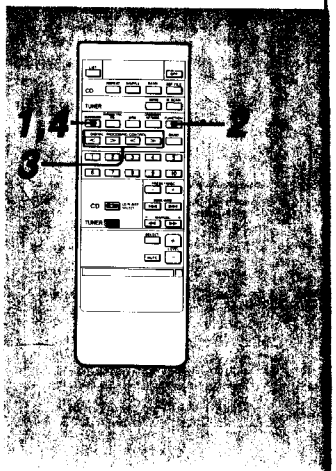
4 **When adjustment is finished**
Press [SURROUND] for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting SUR Parameters

Rear (reverberation from the rear) parameter

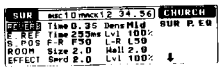
This parameter simulates sound reflected from wall, etc. at the rear side of the listening position. Specifically, it controls the ratio of indirect sound to direct sound.

Adjusting rear parameter

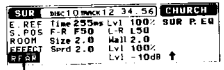


If you want to cancel the operation halfway, press [SURROUND] for more than 2 seconds.

1 **Press [SURROUND] for more than 2 seconds.**
SUR adjustment mode is turned on.



2 **Press [FUNCTION] to scroll the display and select REAR.**



"REAR" is reversed.

3 **Press [DIGITAL PROCESSING CONTROL] to adjust the parameter.**
- **Press [◁][▷][◁][▷] to decrease rear level.**
- **Press [◁][▷][◁][▷] to increase rear level.**

4 **When adjustment is finished**
Press [SURROUND] for more than 2 seconds.
The XES-P1 returns to the play mode.

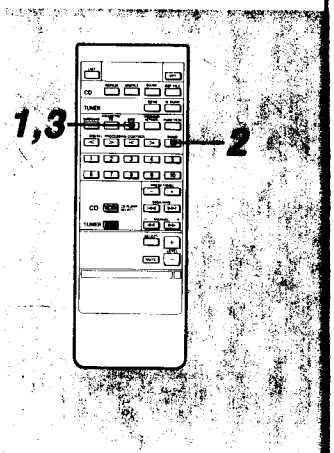
Using Dynamic Range Suppressor (DRS)

What Is DRS?

The DRS compresses the dynamic range of input signal to increase the average output level without distortion. This function is useful for obtaining dynamic sound at small output levels in a noisy environment.

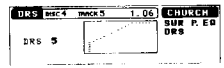
The following section discusses adjusting the DRS parameters. We recommend you to immediately register the parameters once you finish adjusting them. See page 80 on registering DRS.

Adjusting DRS

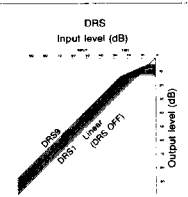


If you want to cancel the operation halfway, press [DRS] for more than 2 seconds.

1 **Press [DRS] for more than 2 seconds.**
DRS adjustment mode is turned on.



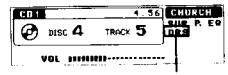
2 **Press [DIGITAL PROCESSING CONTROL] to select the desired DRS effect.**
There are a total of ten DRS effects you can choose from: DRS0-DRS9 (DRS0 = DRS off).
- **Press ◁▷◁▷ to decrease DRS effect.**
- **Press ◁▷◁▷ to increase DRS effect.**



3 **When adjustment is finished**
Press [DRS] for more than 2 seconds.
The XES-P1 returns to the play mode.

To see if DRS is in effect
- **Press [DRS].**

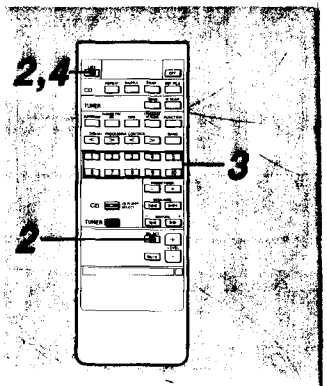
When the effect is on, DRS appears in the display window. When the effect is off, DRS goes off. Listen to the play sound with and without the DRS effect to check how the DRS modifies the sound.



"DRS" is displayed when the DRS is in effect.

Registering Adjusted DSP

You can entitle and register up to 10 soundfield programs (combination of P.EQ, SUR, and DRS settings).



1 **Adjust each of P.EQ, SUR, and DRS.**
(For adjustment method, see pages 50 to 53 on P.EQ, pages 54 to 77 on SUR, and pages 78 to 79 on DRS.)

2 **Press [SELECT], followed by the [LIST] if the *XES-P1 is in the play mode. Or press [LIST]* if the XES-P1 is in the adjustment mode.**
The digital sound menu list is displayed.

3 **Press the numeric button on which you want to register the soundfield program for more than 2 seconds.**
The adjusted soundfield program is assigned to that button.
Registration is finished when the beep tone is heard for the second time.

4 **Press [LIST].**
The XES-P1 returns to the playback mode.

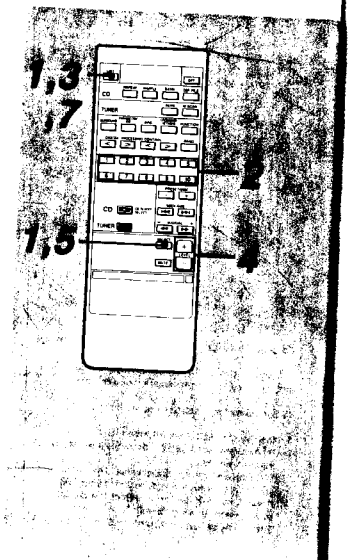
To restore to the factory preset value*1 of SUR

You can restore the factory preset value of SUR, and register it to a digital sound menu desired.

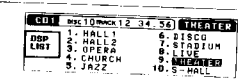
*1 Surround mode registered at the factory

1 **Display the digital sound menu list.**
2 **While pressing [SELECT], press [5] (one of the numeric buttons).**
The surround call list is displayed. The surround call list stands for the factory preset value list.
3 **Press a numeric button to select the digital sound menu to be recalled.**
The factory preset values are recalled.
4 **Press [LIST].**
The digital sound menu is displayed.
5 **Press the numeric button onto which you want to register the factory preset parameters.**
Press the button for more than 2 seconds.
Registration is finished when the beep tone is heard for the second time.
6 **Press [LIST].**
The XES-P1 returns to the play mode.

Changing the title of registered soundfield programs



1 **Press [SELECT], followed by the [LIST] if the XES-P1 is in the play mode. Or press [LIST] if the XES-P1 is in the adjustment mode.**
The digital sound menu is displayed.



2 **Press the corresponding numeric button to select the soundfield program title to change.**

3 **Press [LIST] for more than 2 seconds.**
The digital sound menu is ready for modification.

4 **Press [– LEVEL +] to select character or symbol for input.**
Press [+] to go to the next character or symbol.
Press [–] to go to the previous character or symbol.
See page 29 for the usable characters and symbols.

5 **Press [SELECT] to input character or symbol and move the cursor to next position for further input.**

6 **Repeat steps 4 to 5.**

7 **When the new title is input**
Press [LIST] for more than 2 seconds.
The new title is registered, and the XES-P1 returns to the playback mode.

If you create a new soundfield program but forget to register it, it would be erased.

Be sure to register it by giving a title after you have created a soundfield program.

Adjusting Crossover Network (CNW)

(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

What Is Multi-channel Amplification System?

Multi-channel amplification system assigns audio signal to each frequency band on the crossover network, amplifies it using dedicated amplifier, and reproduces it through dedicated speakers. Because the amplifiers and speakers directly access each frequency band so that any interference between bands during signal transmission is completely eliminated,

- you can use amplifiers and speakers designed to work with particular frequency bands
- you can minimize distortion due to amplifier circuit, particularly inter-modulation distortion that deteriorates the tone quality
- as speakers and amplifiers do not require dividing network between them, but can be connected directly, it is now possible to use speakers dedicated to each frequency band to make the most of the speakers characteristics
- as the counter-electromotive force from low frequency band speakers affecting the high frequency band amplifier is absent, it becomes easier to drive each amplifier

In particular, because XES-X1 processes all audio signal in their original digital signal form, it is now possible to reproduce the same quality of original soundfield with the feel of "liveness" even when you are driving in a car.

Adjustable Parameters

You can adjust the following parameters:

- Level and cross frequency of each frequency band
  You can adjust each frequency band speaker and amplifier to bring out the best soundfield performance.
- Time alignment
  (See page 88 on calculation of time alignment.)
- Phase of each frequency band speaker

Usually, when a multi-speaker system is installed in a car, the speakers with smaller diameters for high and middle frequencies are placed close at the front seat or door, and the ones with large diameters for low frequency are placed close to the back seat or in a trunk. In this setup, because the low frequency speakers and the middle and high frequency speakers are placed at a distance, the person sitting at the front will hear the low frequency later than the overall frequency.

Also, many materials inside the car — such as window glass — are highly reflective, the reflected sound may cause phase shift and affect the soundfield.
If this happens, use the XES-X1 to adjust the time alignment and phase of each frequency speaker in consideration of the speaker's location as well as the listening position.
Read the Operating Instructions of the XES-X1 before connecting this equipment to XES-X1 and speakers.
Also, adjustment of the crossover network requires knowledge of each component as well as experience in the equipment.
When adjustment is not done properly, the speakers and amplifiers may be damaged. If you cannot do the adjustment, contact your local dealer for assistance.

CNW adjustment procedure
(3-way and 4-way speakers system must be preset at XES-X1.)

1 Select the band (speaker) to be adjusted.
2 Adjust the cross frequency and level of the selected band.
3 Adjust the time alignment of the selected band.
4 Adjust the phase of the selected band.
Select next band

We recommend you to immediately register the adjustment.

Adusting Crossover Network (CNW)

(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

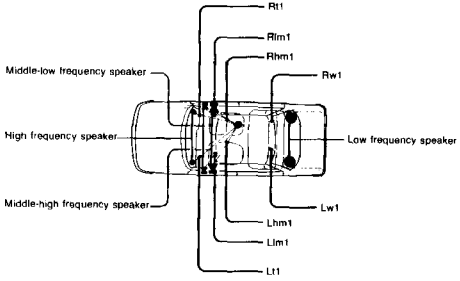
Finding time alignment value

• To find time alignment value for the *driver's seat on the right steering wheel*

1 **Sit on the driver's seat and measure the distance between your ears (left and right) and each speaker.**

Lt1 : distance between left ear and left high frequency speaker
Lhm1: distance between left ear and left middle-high frequency speaker
Llm1: distance between left ear and left middle-low frequency speaker
Lw1: distance between left ear and left low frequency speaker

Rt1 : distance between right ear and right high frequency speaker
Rhm1: distance between right ear and right middle-high frequency speaker
Rlm1: distance between right ear and right middle-low frequency speaker
Rw1: distance between right ear and right low frequency speaker



Distance is measured in meters.

2 **Add the base value of each speaker to the distance obtained in step 1.**

(The base value is the time delay from each speaker converted into distance.)

Base value of each speaker

High frequency speaker	: 0
Middle-high frequency speaker	: 0.05
Middle-low frequency speaker	: 0.09
Low frequency speaker	: 0.16

All units are in meters.

Lt2 = Lt1 + 0
Lhm2 = Lhm1 + 0.05
Llm2 = Llm1 + 0.09
Lw2 = Lw1 + 0.16

Rt2 = Rt1 + 0
Rhm2 = Rhm1 + 0.05
Rlm2 = Rlm1 + 0.09
Rw2 = Rw1 + 0.16

3 **Using the speaker furthest from the driver's seat as the standard (the low frequency speaker on the left if steering wheel is on the right), measure the distance of the remaining speakers (high, middle-high, and middle-low frequency speakers) from the standard speaker.**

L1 = Lw2 – Lt2
L2 = Lw2 – Lhm2
L3 = Lw2 – Llm2
L4 = 0

R1 = Lw2 – Rt2
R2 = Lw2 – Rhm2
R3 = Lw2 – Rlm2
R4 = Lw2 – Rw2

4 **Find the time difference by dividing the distance difference by the sound velocity.**

(Sound velocity: 340m/sec at 1 atm, 15°C)

Tl1 = L1/340
Tl2 = L2/340
Tl3 = L3/340
Tl4 = 0

Tr1 = R1/340
Tr2 = R2/340
Tr3 = R3/340
Tr4 = R4/340

Adjusting Crossover Network (CNW)

(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Finding time alignment value for both the driver's seat and the front seat

(for car with steering wheel on the right or the left)

At step 1, find out the middle position between the driver's and the front seats, and measure the distance from this position to each speaker.

Because Lt1 = Rt1, Lhm1 = Rhm1, Llm1 = Rlm1, Lw1 = Rw1, then R4 = 0, and Tl1 = Tr2, Tl2 = Tr2, Tl3 = Tr3, Tl4 = Tr4 = 0.

Finding time alignment value with the driver's seat on the left

Change the calculation in step 3 to:

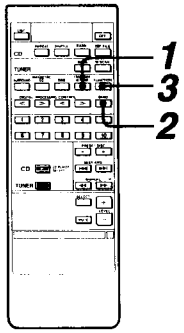
L1 = Rw2 – Lt2
L2 = Rw2 – Lhm2
L3 = Rw2 – Llm2
L4 = Rw2 – Lw2

R1 = Rw2 – Rt2
R2 = Rw2 – Rhm2
R3 = Rw2 – Rlm2
R4 = 0

Adjusting Crossover Network (CNW)

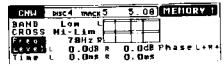
(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Adjusting CNW



If you want to cancel the operation halfway, press CROSSOVER NETWORK for more than 2 seconds.

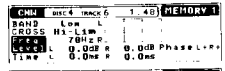
1 **Press CROSSOVER NETWORK for more than 2 seconds.**
CNW adjustment mode is turned on.

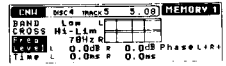


2 **Press BAND to select the frequency band to be adjusted.**
Pressing BAND continuously will cycle through
For a 3-way system: ┌ Low → Mid → High ┐

For a 4-way system: ┌ Low → Lo-Mid ┐
└ High ← Hi-Mid ┘

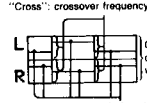
(Setting of 3-way or 4-way system is done at XES-X1 when installing speakers.)





Adjusting network
When adjusting "Band High" (for high frequency speakers), set "Cross" (crossover frequency) to "Lo-Lim" (lowest crossover frequency that can be received by high frequency speakers).
For other bands (medium and low frequency for the speakers), set "Cross" to "Lo-Lim" (maximum crossover frequency for the speakers).
When the band is selected, "Cross" automatically changes to either "Hi-Lim" or "Lo-Lim".

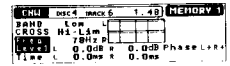
"Cross": crossover frequency indicator



Crossover values on the display window

"Level": output level of each speaker

3 **Press FUNCTION to select "Freq" and "Level".**
"Freq" and "Level" are reversed.

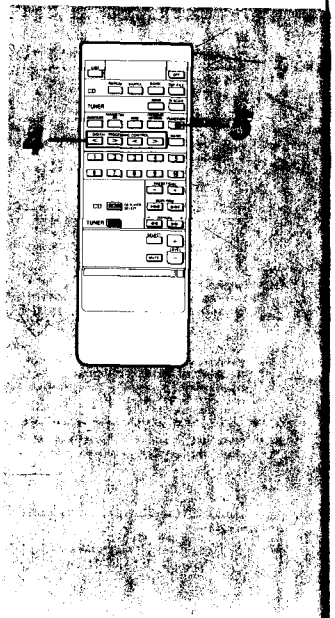


to be continued ☞

Adjusting Crossover Network (CNW)

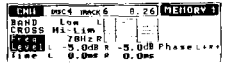
(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Adjusting CNW



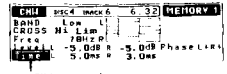
Continued

4 Press DIGITAL PROCESSING CONTROL to adjust the selected band output level and cross frequency.
- Press ◁▷◁▷ to increase output level.
- Press ◁▷◁▷ to decrease output level.
- Press ◁▷◁▷ to shift cross frequency up.
- Press ◁▷◁▷ to shift cross frequency down.



To independently adjust the output level of the left and right channels
- Press FUNCTION to select "Level".
- Press ◁▷◁▷ to increase output level of the left channel.
- Press ◁▷◁▷ to decrease output level of the left channel.
- Press ◁▷◁▷ to increase output level of the right channel.
- Press ◁▷◁▷ to decrease output level of the right channel.

5 Press FUNCTION to select time.
- Press ◁▷◁▷ to increase the time delay of the left speaker.
- Press ◁▷◁▷ to decrease the time delay of the left speaker.
- Press ◁▷◁▷ to increase the time delay of the right speaker.
- Press ◁▷◁▷ to decrease the time delay of the right speaker.



"TIME" is reversed.

Specifically, use the values calculated in page 86 to 88 to set.
- TI1 : time delay of left high frequency speaker
- TI2: time delay of left middle-high frequency speaker
- TI3 : time delay of left middle-low frequency speaker
- TI4 : time delay of left low frequency speaker
- Tr1 : time delay of right high frequency speaker
- Tr2 : time delay of right middle-high frequency speaker
- Tr3 : time delay of right middle-low frequency speaker
- Tr4 : time delay of right low frequency speaker

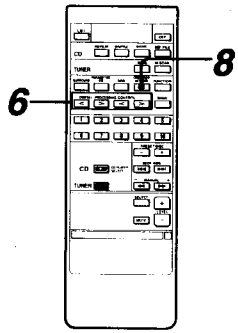
Fine tune it while you are listening to the music.

to be continued ⇨

Adjusting Crossover Network (CNW)

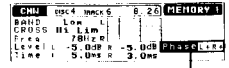
(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Adjusting CNW



Continued

6 Press FUNCTION to adjust the phase.
- Press ◁ ▷ ◁ ▷ to turn phase of the left channel output to positive.
- Press ◁ ▷ ◁ ▷ to turn phase of the left channel output to negative.
- Press ◁ ▷ ◁ ▷ to turn phase of the right channel output to positive.
- Press ◁ ▷ ◁ ▷ to turn phase of the right channel output to negative.



"PHASE" is reversed

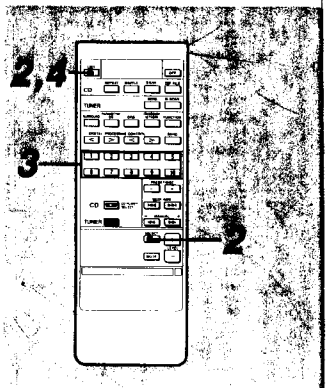
7 To adjust other bands
Repeat steps 2 to 6.

8 When adjustment is finished
Press CROSSOVER NETWORK for more than 2 seconds.
The XES-P1 returns to the play mode.

Adjusting Crossover Network (CNW)

(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Registering Adjusted CNW



You can register up to 10 adjusted CNW settings to the crossover list.

1 **Adjust CNW.**
(See pages 84 to 93 on adjusting CNW.)

2 **Press [SELECT] twice if the XES-P1 is in the play mode.**
Or press [LIST] if the XES-P1 is in the adjustment mode.
The crossover list is displayed.

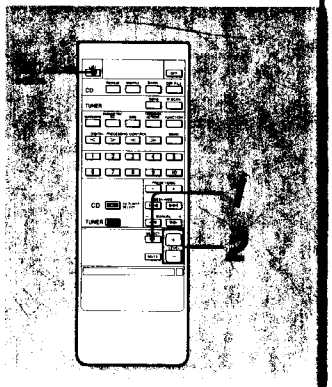
3 **Press the corresponding numeric button for more than 2 seconds to register the setting.**
The setting is assigned to the numeric button. When a beep tone is heard for the second time, registration is finished.

4 **Press [LIST].**
The XES-P1 returns to the play mode.

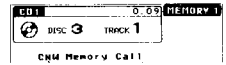
Adjusting Crossover Network (CNW)

(This applies only if the optionally available digital crossover network XES-X1 is connected to use this processing preamplifier in multi-channel amplification system.)

Retrieving Registered Crossover Settings

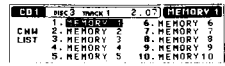


1 **Press [SELECT] twice while the XES-P1 is in the play mode.**
The crossover menu flashes.



• To display the crossover list
Press [LIST].
The crossover list is displayed.

2 **Press [– LEVEL +] to select the desired crossover menu.**
• Press [+] to go to the next menu.
• Press [–] to return to the previous menu.
You can use the numeric buttons to select the menu.

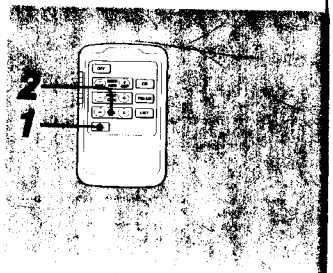


To return to the play mode from the crossover list
Press [LIST].

You can change the title of registered crossover settings in the same way as for the soundfield programs. (See page 82.)

Adjusting Overall Soundfield

Adjusting the Balance of Left and Right Speakers



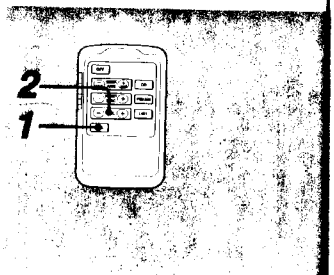
1 **Press [SEL] to display "BAL".**
Pressing [SEL] continuously cycle through
[• DSP menu (flashing) → CNW menu (flashing) →
VOL ← FADER ← BALANCE ←]

"BAL" is displayed.

2 **Press [– VOL +] to adjust the balance of the left and right speakers.**
- **Press [+] to increase the volume of the right speaker.**
- **Press [–] to increase the volume of the left speaker.**

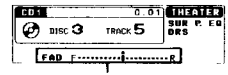
To return to sound volume display
- **Press [SEL] twice.** (If [SEL] is not pressed, after about 8 seconds have elapsed, the XES-P1 will automatically return to the sound volume display.)

Adjusting the Balance of Front and Rear Speakers



To adjust the volume of the rear speakers

1 **Press [SEL] 4 times to display "FAD".**



"FAD" is displayed.

2 **Press [– VOL +] to adjust the balance of the front and rear speakers.**
- **Press [+] to increase the volume of the rear speaker.**
- **Press [–] to decrease the volume of the rear speaker.**

To return to sound volume display
- **Press [SEL] once.** (If [SEL] is not pressed, after about 8 seconds have elapsed, the XES-P1 will automatically return to the sound volume display.)

Specifications

Amplifier section

Frequency response	5 Hz 20 kHz $^{+0}_{-1}$ dB
(PEQ, SUR and DRS disabled)	
Input sensitivity and input impedance	
	ANALOG INPUT 775 mV, 50 kilohms
	DIGITAL INPUT 1,2
S/N	DIGITAL INPUT 1, 2 front 100 dB, rear 100 dB (A)
Output voltage and output impedance	
	ANALOG OUTPUT +14 dBs 3.8 V (playback of CD, 0dB)
	DIGITAL OUTPUT

Digital Signal Processor section

Parametric Equalizer	
Band	6-band
Center frequency	16 Hz 20 kHz, 1/6 octave step
Level	±12 dB, 0.1 dB step
Slope (Q)	4-step selectable (0.7, 1.4, 3.7, 20)
Dynamic Range Suppressor	9-step selectable
Surround	
Room Size	0.5 2.0
Wall	0.5 2.0
Seat Position	F50 0 R50, L50 0 R50
Early Reflection Time	1 255 ms
Early Reflection Level	0 100%
Reverb Time	0.3 5.0 s
Reverb Density	Low, Mid, High
Effect Spread	0.5 2.0
Effect Level	0 100%
Rear Level	−∞ 0 dB

A/D, D/A converters section

A/D converter	
Type	High Density Linear Converter
Sampling frequency	44.1 kHz
D/A converter	
Front	18-bit linear 8 fs × 2
Rear	18-bit linear 8 fs × 2

General

Power requirements	12 V DC car batteries (negative ground)
Power consumption	1.5 A
Output	Line outputs for front speakers
	Line outputs for rear speakers
	Optical outputs for front speakers
Input	Line inputs
	Optical input 1
	Optical input 2
	Power input
Dimensions (w/h/d)	
Display unit	178 × 50 × 169 mm (7 1/8 × 2 × 6 3/4 inches) not including projecting parts and controls
Hideaway unit	250 × 50 × 215 mm (9 7/8 × 2 × 8 1/2 inches) not including projecting parts and controls
Mounting dimensions (w/h/d)	
Display unit	178 × 50 × 151 mm (7 1/8 × 2 × 6 inches) not including projecting parts and controls
Hideaway unit	250 × 50 × 215 mm (9 7/8 × 2 × 8 1/2 inches) not including projecting parts and controls
Weight	
Display unit	Approx. 0.9 kg (1 lb. 15 oz)
Hideaway unit	Approx. 1.5 kg (3 lb. 5 oz)
Supplied accessories	Joystick commander (1)
	Mini remote commander (1)
	Full remote commander (1)
	Mounting hardware (1 set)
	Power connection cord (1)
	UNILINK cable 5.5 m (1)
	2 m (1)
	Connection cable (optical) 2 m (1)
	Cover for the manuals (1)
	Anti-noise filter XA-50 (1)
	Size AA (R6) batteries (4)

Design and specifications are subject to change without notice.

Factory Preset Parameters

Prest No. / Parameter	1	2	3	4	5	6	7	8	9	10
Surround Mode	HALL 1	HALL 2	OPERA	CHURCH	JAZZ CLUB	DISCO	STADIUM	LIVE CONCERT	THEATER	SMALL HALL
Room Size	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.6
Wall	1.0	1.2	1.1	1.8	1.7	1.0	0.7	1.1	0.7	1.5
Seat Position (Rear-Front, Left-Right)	F20,0	F20,0	F20,0	F20,0	F20,0	0,0	F20,0	F20,0	R5,0	0,0
Effect Level	90%	90%	90%	90%	90%	90%	90%	90%	100%	100%
Early Reflection Time	27ms	32ms	38ms	97ms	21ms	14ms	255ms	68ms	43ms	18ms
Early Reflection Level	80%	80%	80%	65%	—	—	80%	80%	—	—
Reverb Time	2.2sec	2.5sec	1.8sec	2.6sec	—	—	2.0sec	2.4sec	—	—
Spread	1.3	1.6	0.8	2.0	—	—	1.6	1.6	—	—
Reverb Density	Mid	Mid	Mid	Mid	—	—	Mid	Mid	—	—

Troubleshooting Guide

General

Symptom	Cause (and remedy)	
System does not function.	Incorrect connection to joystick commander, or remote commander running out of battery	→ Try with another remote commander and see if the unit can operate or not. Replace remote commander's batteries with new ones.
	Incorrect connection	→ Check connection.
	You have tried to operate equipment still not connected to the unit.	→ Operate CD charger or tuner as standalone equipment.
No sound	Volume set to minimum	→ Increase volume.
	System in MUTE mode	→ Turn volume up. Release MUTE mode by pressing the [MUTE] button. (See page 15.)
No sound from rear speaker	Rear level set to 0% during SUR adjustment	→ Increase rear level. (See page 76.)
	Rear speaker volume lowered during FAD adjustment	→ Increase volume of rear speaker. (See page 100.)

CD section

Symptom	Cause (and remedy)	
Music cut off while being played	CD damaged	→ Try with another CD.
Custom file list not displayed.	Disc title not created yet	→ Create disc title and register them. (See page 30.)

Tuner section

Symptom	Cause (and remedy)	
No sound	Tuner preset with frequency without station	→ Preset frequency with station (See pages 36 and 37.)
Station selected by pressing ◀◀ SEEK/AMS ▶▶ cannot be heard.	Radio signal of the station too weak	→ Use manual tuning method (See page 34.)
	Reception sensitivity set to LOCAL	→ Press [SENS] to select reception sensitivity. (See page 35.)

Moving between Modes